

Unlike fossil fuel power plants, Philpott uses water to spin its generators to produce electricity through a process known as hydroelectric power generation. Water is held in Philpott Lake behind the dam. Water is allowed to flow into an intake and travel through a large pipe known as a penstock. The flowing water strikes the turbine, causing it to turn and subsequently spin the connected generator, producing electricity. After passing through the turbine, the water re-enters the Smith River on the downstream side of the dam.

Hydroelectric power is America's leading renewable energy resource. It is the most reliable, the most efficient, and the most economical.

Unlike fossil fuel fired power plants, hydroelectric power generation is clean, produces no pollution, and doesn't lead to scars on our earth from the drilling of holes or digging of strip mines.

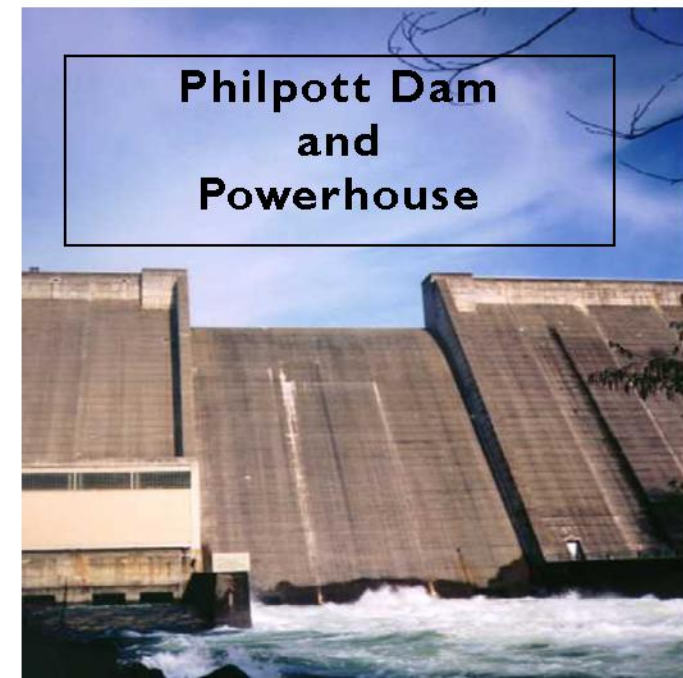
The U.S. Army Corps of Engineers is proud and honored to be a responsible steward of our Nation's resources.

Philpott Lake
Visitor Assistance Center
1058 Philpott Dam Road
Bassett, VA 24055

Telephone: (276)629-2703
Fax: (276)629-3493
E-mail: philpott@usace.army.mil
Website: www.saw.usace.army.mil/Philpott/index.htm

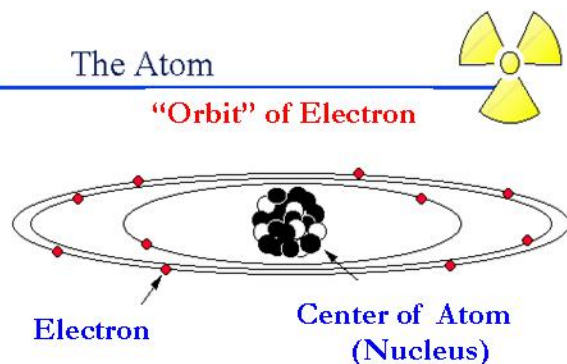
U.S. Army Corps of Engineers:

Providing our
nation with
electricity while
preserving our
natural resources



The Atom

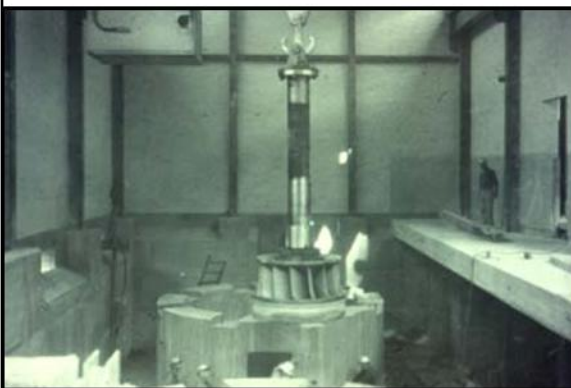
"Orbit" of Electron



Electricity is actually electrons moving through a wire or other conductor, much like water flowing through a pipe. Electrons are negatively charged particles that surround an atom. They "orbit" around the atom much like our planets orbiting the sun. Electrons can flow from atom to atom in metals, particularly those used for wires to make power lines. When the wires are connected in a loop called a circuit, electricity can flow. This means the power lines which leave from a power production facility and go into the community, must eventually lead all the way back to the facility.



To produce the electricity for our homes and our industries, three things are needed: a magnet, a metal conductor (wire), and motion. Electrical generators are machines that spin large magnets inside a coil of wire. The moving magnets cause electrons to move through the wire circuits creating the flow of electricity. The electricity can be routed anywhere a powerline can run.



Different methods can be used to spin the large magnets in the electrical generators. Some power production facilities burn fossil fuels to produce the energy necessary to spin the generators. Fossil fuels (coal, oil, natural gas) were formed from the remains of prehistoric plants and animals. Fossil fuels are not renewable. Once we've burned them all, there isn't anymore! Alarmingly, our consumption of fossil fuels has doubled every 20 years since 1900. Electricity production in coal-fired power plants is accomplished by burning coal to heat water in a boiler to produce steam. The

steam, under very high pressure, is released into a turbine. A turbine has blades, somewhat like a pinwheel. When the steam strikes the blades, it causes the turbine to turn. The turbine is connected directly to the generator. As the turbine causes the generator to spin, electricity is produced.

Unfortunately for our planet, electricity is not all that is produced by fossil fuel fired power plants. Large amounts of carbon monoxide and carbon dioxide are released into the atmosphere as by-products of the burning of the fossil fuels. This release of carbon dioxide is a large contributor to the "greenhouse effect" which is blamed



for the current global warming trend. Another by-product released in our atmosphere is sulphur dioxide. In the upper atmosphere, the sulphur dioxide combines with water vapor to form sulfuric acid. When it rains, the sulfuric acid is returned to the earth in the form of "acid rain". Acid rain can lead to health problems and even the destruction of many forms of plant and animal life and is very corrosive to metal surfaces.